

LENGTH OF PRG J0576

1 IDENT DKHNDLR
 2
 3 MACRO NAME LAB,, FUNCT
 4 \$LAB ENA ISSUE
 5 RTJ \$FUNCT
 6 END SEL
 7
 8
 9

0 0000 9+001 X0 EQU 0
 00001 10 X1 EQU 1
 00002 11 X2 EQU 2
 00003 12 X3 EQU 3
 00000 13 IMPURE EQU 0
 00022 14 CLOCK EQU 228
 15
 16 ****
 17 *
 18 * THE FOLLOWING DEFINITIONS ARE USED TO DIFFERENTIATE BETWEEN *
 19 * DIFFERENT TYPES OF I/O OPERATIONS *
 20 *
 21 ***

00004 23 NOSUB EQU 0043 DO NOT MAKE SUBSTITUTIONS
 7775 24 *
 00001 25 MSFIO EQU -00002B SEZ USER DISK PACK I/O
 26 NORELOC EQU 1 USE MSF RELOCATION AREA INSTEAD
 27 * OF DKPF
 28 *
 00222 29 GAMBLE EQU 222B CODE FOR A WRITE ONLY
 00446 30 READ EQU 442B+NOSUB CODE FOR A READ
 00332 31 WRITE EQU 332B CODE FOR WRITE AND CHECK
 00336 32 WRITENS EQU WRITE+NOSUB SAME AS WRITE BUT NO SUB
 00445 33 MSFREAD EQU READ+MSFIO+NORELOC READ ON USER DISK PACK
 00335 34 MSFWRITE EQU WRITENS+MSFIO+NORELOC WRITE ON USER DISK PACK
 00444 35 MONREAD EQU MSFREAD-NORELOC
 36

00012 37 COUNT EQU 10 CONTROLS WAITING TIME FOR SEEKS
 07773 38
 41 DINT EQU 7773B
 00040 42 DKPF EQU 40B USE STATE 2
 00000 43
 00000 44 SELECT EQU 000008
 45 SENSE EQU 000008
 46

00501 P 47 ENTRY DKCLK
 00000 P 48 ENTRY DKINT
 00446 49 ENTRY READ
 00222 50 ENTRY GAMBLE
 00444 51 ENTRY MONREAD
 00445 52 ENTRY MSFREAD
 00335 53 ENTRY MSFWRITE
 00500 P 54 ENTRY MXBTRET
 00434 P 55 ENTRY MXIRERR
 00332 56 ENTRY WRITE
 00336 57 ENTRY WRITENS
 58
 59

60 *
 61 *
 62 *
 63 EXT BIT23
 64 EXT BLOCKTBL
 65 EXT CONNECT
 66 EXT D10
 67 EXT DISKADD
 68 EXT DKACTIVE
 69 EXT DKCONTAB TABLE OF CONTROLLERS
 70 EXT DKPOINT
 71 EXT DKSTATAB
 72 EXT MSUNITS
 73 EXT MSUNITM1 MSUNITS-1
 74 EXT MXBT
 75 EXT MXNE
 76
 77 EXT MXQADD DISK ADDRESS

78	EXT	MXQC0M	COMMAND AND COMPLETION RETURN
79	EXT	MXQERR	ERROR COUNT
80	EXT	MXQWC	WORD COUNT
81	EXT	MXQQ	18 BIT ABSOLUTE CORE ADDRESS
82	EXT	MXQISTAT	STATUS RETURNED BY INTSORT
83	EXT	MXQCSTAT	CHANNEL STATUS AFTER THE
84	*		CHANNEL INTERRUPT
85	EXT	MXWAITQ	QUEUE OF TRANSFERS TO BE DONE
86			
87	EXT	NBIT23	
88	EXT	NUMDKCON	NUMBER OF DISK CONTROLLERS
89	EXT	NUMDKM1	NUMDKCON - 1
90	EXT	OPMSG	
91	EXT	OPMSGX	
92	EXT	SYSERR	
93	EXT	UNCON	

96 *
 97 * THE FOLLOWING SECTION IS ENTERED WHENEVER THERE IS ANY
 98 * KIND OF EQUIPMENT INTERRUPT. IT PLUGS A FEW POINTERS
 99 * AND ENTERS THE RESEEK SECTION OR THE I/C COMPLETED SECTION
 100 * DEPENDING UPON THE STATUS OF THE CONTROLLER IN DKCONTAB.
 101 *

00000	00000 P	103	DKINT	EQU	*	COME HERE ON EQUIPMENT INTERRUPTS
00001	77730000	104	VFD	A12/DINT		INTERRUPT CODE TO A
00002	53100000	105	TIA	X1		
00003	14700077	106	ENQ	778		SET UP FOR MEG
00004	13000017	107	SHAQ	15		
00005	14177777 X	108	ENI	NUMDKCON, X1		
00006	06177777 X	109	MEQ	DKCONTAB, 1		LOOK FOR THE CONTROLLER
00007	00000006 P	110	HLT	*		
00008	20100005 X	111	LDA	DKCONTAB, X1		LOAD A GOOD CONNECT CODE
00009	53500000	112	TAI	X1		SAVE IN X1 FOR CONNECT ROUTINE
00010	53300000	113	TIA	X3		RETURN ADDRESS TO X2
00011	53600000	114	TAI	X2		
00012	14700764	115	ENQ	500		SAY 1/2 SECOND
00013	14300014 P	116	ENI	* , X3		TELL CONNECT WHERE WE ARE
00014	01077777 X	117	UJP	CONNECT		
00015	00700460 P	118	RTJ	CHANINT		FOR CHANNEL ERRORS ETC
00016	01200000	119	UJP	0, X2		THE CALL WAS QUEUED
00017		120				
00018		121				
00019		122				
00020	17677000	123	ANA	770008		GET JUST THE CHANNEL AND EQUIPMENT
00021	14710077	124	ENQ	100778		FORM THE MASK FOR THE MEQ
00022	2400011	125	SHQ	9		
00023	14100004 X	126	ENI	NUMDKCON, X1		ENTER THE NUMBER OF CONTROLLERS
00024	06100007 X	127	MEQ	DKCONTAB, 1		LOOK FOR THE PROPER CONTROLLER
00025	00777777 X	128	RTJ	SYSERR		WE SHOULD HAVE NEVER GOT HERE
00026	20100024 X	129	LDA	DKCONTAB, X1		
00027	44000244 P	130	SWA	CONCODE		SAVE THE CONNECT CODE
00028	47100164 P	131	STI	CONNUM, X1		SAVE THE CONTROLLER NUMBER
00029	47200227 P	132	STI	DKRETURN, X2		SAVE THE RETURN ADDRESS
00030	03300254 P	133	AZJ, LT	DKOPINPR		JUMP IF I/O IN PROGRESS

134 *

135 *

136 * THIS SECTION PERFORMS A SEEK ON ALL UNITS ON A PARTICULAR

137 * CONTROLLER THAT HAVE TRANSFERS TO DO. IF ANY UNIT IS ON

138 * SECTOR AFTER THE SEEK IS PERFORMED THE REQUIRED I/O

139 * OPERATION IS STARTED.

140 *

00033	00033 P	142	SEEKLOOP	EQU	*	
00034	14277777	143	SEKLUPO2	EQU	*	START AT THE FRONT OF THE TABLE
00035	47000236 P	144	ENI	-0, X2		
00036	47000240 P	144+001	STI	CONFLAG, X0		
00037	20277777 X	145	STI	CONFLG1, X0		
00038	03300234 P	146	NEXTUNIT	LDA	DKSTATAB, X2	LOAD A CONNECT CODE
00039	36000244 P	147	AZJ, LT	EXITING		JUMP IF EQUIPMENT IS NOT PRESENT
00040	17677000	147+001	SCA	CONCODE		CHECK FOR THE RIGHT CONTROLLER
00041	03100233 P	148	ANA	770008		SAVE JUST THE CONNECT CODE
00042	20200036 X	149	AZJ, NE	ENDLOOP		JUMP IF NOT THE RIGHT CONTROLLER
00043	44000061 P	150	LOA	DKSTATAB, X2		LOAD THE CONNECT CODE AGAIN
00044	12000011	151	SWA	CON		
00045	17600037	152	SHA	9		GET THE LOGICAL PACK NUMBER
00046	53700000	153	ANA	37B		
00047	20377777 X	154	TAI	X3		PUT IT INTO X3
00048	17677777	155	LOA	MXWAITQ, X3		GET THE TRANSFER BLOCK ADDRESS
00049	03000233 P	156	ANA	77777B		SAVE JUST THE POINTER FIELD
00050	47200240 P	157	AZJ, EQ	ENDLOOP		
00051	47300112 P	158	STI	CONFLG1, X2		
00052	21377777 X	158+001	STI	UNIT, X3		SAVE THE UNIT NUMBER
00053	41000560 P	159	LDQ	BLOCKTBL, X3		LOAD LOW FILE BLOCK ON THE
00054	53700000	160	STQ	SEEKADD		DEVICE AND SAVE FOR LATER
00055	00060 P	161	TAI	X3		BLOCK ADDRESS TO X3
00056	14100002	162				
00057	77000000	163				
00058	01000230 P	164	ENI	2, X1		REJECT 3 TIMES
00059	77200001	165	CON	IMPURE, 0		CONNECT TO THE UNIT
00060	01000231 P	166	UJP	CONERR		
00061	20000061 P	167	EXS	0001B, SENSE		IS IT READY
00062	44000244 P	168	EXS	0002B, SENSE		IS IT BUSY
00063	04000231 P	169	UJP	SELREADY		IGNORE THE UNIT
00064	20000061 P	170	LDA	CON		LOAD THE CONNECT CODE
00065	44000244 P	171	SWA	CONCODE		SAVE CONNECT CODE FOR LATER

00070	47200236 P	171+001	STI	CONFLAG,X2	
00071	12077771	173	SHA	-6	GET THE DEVICE TYPE
00072	17600003	174	ANA	3B	RELEASE ON SECTOR INTERRUPTS
00073	53500000	175	TAI	X1	
00074	77100031	176	SEL	0031B,SELECT	
00075	14000000	177	NOP	0	
00076	20377777 X	178	LDA	MXQWC,X3	CHECK FOR USER DISK PACK
00077	12000007	179	SHA	7	
00100	03300103 P	180	AZJ,LT	*+3	JUMP IF A SYSTEM PACK
00101	20377777 X	181	LDA	MXQADD,X3	LOAD THE SECTCR ADDRESS
00102	01000106 P	182	UJP	*+4	
00103	20300101 X	183	LDA	MXQADD,X3	LOAD THE FILE BLOCK NUMBER
00104	31000560 P	184	SBA	SEEKADD	SUBTRACK LOW BLOCK ON THE DEVICE
00105	50100555 P	185	MUA	SECPCFB,X1	CONVERT TO SECTOR ADDRESS
00106	13077747	186	SHAQ	-24	
00107	51100552 P	187	DVA	SECPCYL,X1	FIND CYLINDER ADDRESS
00110	12400014	188	SHQ	12	SECTOR BITS TO HIGH (Q)
00111	13000014	189	SHAQ	12	FORM SEEK ADDRESS
00112	14100000	190	UNIT	IMPURE,X1	ENTER DEVICE NUMBER
00113	40177777 X	191	ENI	DISKADD,X1	SAVE THE DISK ADDRESS
00114	40000560 P	192	STA	SEEKADD	
00115	14600010	193	ISSUE	(00108)	SELECT LOAD ADDRESS
00117	14600000	194	ENA	0	USE STATE ZERO FOR RELOCATION
00120	76000561 P	195	OUTW	0,SEEKADD,SEEKADD+1	DO THE SEEK
00121	00000560 P				
00122	01000120 P	196	UJP	*-2	ERRORS SHOULD NOT HAPPEN
00123	14100012	197	ENI	COUNT,X1	ENTER MAX WAITING TIME
00124	77300006	198	INS	0006B,SENSE	WAIT FOR THE CHANNEL TO FINISH
00125	02500124 P	199	IJD	*-1,X1	
00126	77300007	200	INS	0007B,SENSE	CHECK FOR CHANNEL PARITY ERROR
00127	01000437 P	201	UJP	SEEKERR	SOMETHING IS WRONG
00130	77200010	202	EXS	0010B,SENSE	ARE WE ON SECTOR
00131	77200002	203	EXS	0002B,SENSE	IS THE SEEK DONE
00132	02500130 P	204	IJD	*-2,X1	
00133	05100001	205	ISG	1,X1	
00134	01000233 P	206	UJP	ENDLOOP	FORGET THIS UNIT
00135	20300076 X	207	LDA	MXQWC,X3	LOAD THE I/O REQUEST
00136	03200141 P	208	AZJ,GE	NOTREAD	
00137	14704074	209	ENQ	4074B	SELECT READ AND INPW
00140	01000146 P	210	UJP	IOSHARE	
	00141 P	211			
00141	12000001	212	NOTREAD	EQU	*
00142	03300145 P	213	SHA	1	IS IT WRITE
00143	14704276	214	AZJ,LT	DKWRITE	
00144	01000146 P	215	ENQ	4276B	SELECT SEARCH COMPARE AND OUTW
	00145 P	216	UJP	IOSHARE	
00145	14704176	217			
	00145 P	218	DKWRITE	EQU	*
		219	ENQ	4176B	SELECT WRITE AND OUTW
	00146 P	220			
00146	43001024 P	221	IOSHARE	EQU	*
00147	14600000	222	SQCH	DKIO	SAVE THE INPW OR OUTW
00148	40377777 X	223	ENA	0	
00150	13000022	224	STA	MXQISTAT,X3	CLEAR THE CHANNEL STATUS
00151	13000022	225	SHAQ	18	FUNCTION CODE TO (A)
00152	00700454 P	226	RTJ	SEL	
00153	14600022	227	ISSUE	(22B)	INTERRUPT ON END OF OPERATION
00155	14600024	228	ISSUE	(24B)	INTERRUPT ON ABNORMAL END OF OP
00157	14100002	229	ENI	DKPF/2 ¹⁴ ,X1	
00160	20300135 X	230	LDA	MXQWC,X3	SHOULD WE LOCATE THRU THE MSF AREA
00161	12000010	231	SHA	8	
00162	03300252 P	232	AZJ,LT	MSFRET	
00163	21377777 X	233	LDQ	MXQQ,X3	GET THE CORE ADDRESS
00164	14600000	234	CONNUM	IMPURE	ENTER THE CONTROLLER NUMBER
00165	12000001	235	SHA	1	USE 2 PF LOCATIONS / CONTROLLER
00166	53600000	236	TAI	X2	STARTING LOCATION TO X2
00167	14600000	237	ENA	0	
00170	12400006	238	SHQ	6	
00171	13000007	239	SHAQ	7	PAGE NUMBER OF THE XFER TO A
00172	12000002	240	SHA	2	FORM 1/4 PAGE NUMBER
00173	77644040	241	APF	DKPF,X2	SET THE PAGE FILE
00174	15600004	242	INA	4B	POINT TO THE NEXT PAGE
00175	77644041	243	APF	DKPF+1,X2	
00176	53200000	244	TIA	X2	FORM THE NEW ADDRESS
00177	13000013	245	SHAQ	11	
	00200 P	246	SETADD	EQU	*
00200	44000206 P	247	SWA	DKIO+1	SAVE THE FWA
00201	30300160 X	248	ADA	MXQWC,X3	ADD IN THE LENGTH
00202	44000205 P	249	SWA	DKIO	SAVE THE LWA

00203	77511377	250		CIL0	377B	WATCH OUT FOR CHRISTMAS LITES
00204	53100000	251		TIA	X1	RELOCATION STATE TO A
00205	00-00-0000	252	DKIO	VFD	A6/IMPURE,A18/IMPURE	,09/004,A15/IMPURE
00207	01000205 P	253		UJP	*-2	SHOULD NOT BE ERRORS
00210	20377777 X	254		LDA	MXQCSTAT,X3	PICK UP THE STATUS WORD
00211	17607777	255		ANA	77778	SAVE LAST TIMES STATUS
00212	12000014	256		SHA	12	
00213	40300210 X	257		STA	MXQCSTAT,X3	AND STORE IT BACK
00214	54200164 P	258		LDI	CONNUM,X2	GET THE CONTROLLER NUMBER
00215	20077777 X	259		LDA	BIT23	SAY IC IS HAPPENING ON THIS
00216	35200026 X	260		SSA	DKCONTAB,X2	CONTROLLER
00217	40200216 X	261		STA	DKCONTAB,X2	
00220	77550000	262		CIA		GET THE CHANNEL NUMBER
00221	53500000	263		TAI	X1	
00222	53300000	264		TIA	X3	GET THE LOGICAL PACK NUMBER
00223	40177777 X	265		STA	DKACTIVE,X1	SAY WHICH UNIT HAS THE CONTROLLER
00224	40277777 X	266		STA	DKPOINT,X2	
00225	20000061 P	267		LDA	CON	GET THE CONNECT CODE OF THE UNIT
00226	44200217 X	268		SWA	DKCONTAB,X2	THAT IS ACTIVE
00227	01000000	269	DKRETURN UJP		IMPURE	EXIT
00230	02500061 P	270				
00231	77100020	271				
00232	14000000	272				
00233	02200036 P	273				
00234	P	274				
00235	14100012	275	CONERR	IJD	CON,X1	LOOP A FEW TIMES
00236	14600030	276	SELREADY	SEL	00206,SELECT	SELECT READY AND NOT BUSY
00237	04000000	277	NOP		0	
00240	01000243 P	278				
00241	04000000	279	ENDLOOP	IJI	NEXTUNIT,X2	GO TRY ANOTHER UNIT
00242	01000250 P	280				
00243	14600020	281	EXITING	EQU	*	
00244	44000246 P	282		ENI	COUNT,X1	
00245	77000000	283		ENA	30B	SELECT END OF SEEK
00246	02500236 P	284	CONFLAG	ISE	IMPURE,0	SKIP IF A CONNECT CODE IS IN
00247	77100000	285	02500236 P	UJP	*+4	
00250	02500236 P	286	CONFLG1	ISE	IMPURE,X0	
00251	54200227 P	287	02500236 P	UJP	DKEXIT	
00252	01077777 X	288		ENI	20B	SELECT READY NOT BUSY
00253	00252 P	289		ENA		
	290		CONCODE	CON	IMPURE,0	CONNECT TO THE UNIT
	291		OKEXIT.1	IJD	CONFLAG,X1	
	292		OKEXIT.1	SEL	IMPURE,SELECT	SELECT THE FUNCTION
	293		OKEXIT.1	IJD	CONFLAG,X1	
	294		MSFREL	EQU	*	
	295			LDA	MXQQ,X3	
	296			IJI	SETADD,X1	LOAD THE FIRST WORD ADDRESS

299 *
 300 * THIS SECTION IS ENTERED AFTER A TRANSFER IS FINISHED. IT
 301 * CHECKS TO SEE IF ANY ERRORS WERE DISCOVERED DURING CHANNEL
 302 * INTERRUPT PROCESSING OR IF ANY ERROR STATUS HAS COME UP
 303 * SINCE THEN. IN EITHER CASE THE ERROR COUNTER FOR THE
 304 * TRANSFER IS INCREMENTED AND CHECKED TO SEE IF TOO MANY
 305 * ERRORS HAVE OCCURRED. IF TOO MANY HAVE, EXIT IS MADE TO MXBT,
 306 * OTHERWISE THE UNIT IS RESEEKED. EVERY EIGHT ERRORS A RESTORE
 307 * IS DONE ON THE UNIT IN HOPES THAT THE NEW SEEK WILL CAUSE
 308 * MARGINAL ADDRESSING PROBLEMS TO GO AWAY. IF THE TRANSFER IS
 309 * OK, A CHECK FOR PREVIOUS ERRORS IS MADE AND A MESSAGE IS
 310 * PRINTED GIVING THE STATUS OF THE LAST ERROR ON THE DEVICE.
 311 *

313		DKOPINPR	EGU	*	
00254	44000255 P	314	CON02	SWA CON	SAVE THE CONNECT CODE
00255	77000000 P	315	IMPURE,0		
00256	01000250 P	316	UJP	THE CONNECT SHOULD NOT REJECT	
00257	77100023 P	317	DKEXIT		
00260	01000250 P	318	SEL	RELEASE EOP	
00261	37077777 X	319	UJP	CLEAR THE ICP BIT	
00262	77100025	320	LPA	RELEASE ABNORMAL EOP	
00263	01000250 P	321	SEL		
00264	40100226 X	322	UJP		
00265	20100224 X	323	STA	POINT TO THE FROPER BLOCK	
00266	53700000	324	LDA	DKCONTAB,X1	
00267	77550000	325	TAI	X3	
00270	42001357 P 00273 3	326	CIA	COMPUTE THE LEFT OVER WORD	
00271	15600010	327	SACH	COUNT	
00272	42001363 P 00274 3	328	INA	108	
00273	53020000	329	SACH	TMQ+3	
00274	53010000	330	TMA	IMPURE	
00275	13077775	331	TMQ	IMPURE	
00276	17677777	332	SHAQ	2	
00277	17777777	333	ANA	77777B	
00278	16477777	334	ANQ	77777B	
00300	53040000	335	XOA,S	77777B	
00301	21300150 X	336	AQA		
00302	40300302 X	337	LDQ	LEFT OVER WORD COUNT IS NOW IN A	
00303	77205026	338	STA	LOAD THE CHANNEL STATUS	
00304	01000402 P	339	EXS	SAVE IN THE MXQ ELEMENT	
00305	20300213 X	340	UJP	CHECK FOR ANY ERRORS	
00306	17605164	341	LDA	JUMP IF THERE IS ONE	
00307	03100406 P	342	ANA	WERE THERE ANY PREVIOUS ERRORS	
00310	13000030	343	AZJ,NE	JUST LOOK AT THE ERROR BITS	
00311	03100430 P	344	SHAQ	JUMP IF AN ERROR	
00312	20300201 X	345	AZJ,NE	CHANNEL STATUS TO A	
00313	03300325 P	346	LDA	JUMP IF ANY CHANNEL ERRORS	
00314	12000001	347	AZJ,LT	LOAD THE I/O REQUEST	
00315	03200325 P	348	SHA	JUMP IF A READ	
00316	12000001	349	AZJ,GE		
00317	03200325 P	350	SHA	JUMP IF IT WAS A WRITE CHECK	
00320	17477776 P	351	AZJ,GE		
00321	12000026	352	ANA,S	JUMP IF NO WRITE CHECK WANTED	
00322	40300313 X	353	SHA	CLEAR THE WRITE BIT	
00323	01000033 P	354	STA	STORE THE I/O COMMAND BACK	
00324	01000033 P	355	UJP	GO LOOK FOR SOMETHING TO DO	
00325	00325 P	356			
00326	20377777 X	357	DKDONE	WERE THERE ANY ERRORS	
00327	12077763 P	358	EQU		
00328	03100340 P	359	LDA	-12	
00329	00330 P	360	SHA		
00330	20377777 X	361	DKDONE02	JUMP IF THERE WERE	
00331	12077755	362	EQU		
00332	53500000	363	LDA	LOAD THE UNIT NUMBER	
00333	24000215 X	364	SHA	-18	
00334	37300000	365	TAI	LOGICIAL UNIT NUMBER TO X1	
00335	40100050 X	366	LCA	CLEAR BIT 23 CN THE MXQ ELEMENT	
00336	14100033 P	367	LPA	GET THE NEXT POINTER	
00337	01077777 X	368	STA		
00338	00340 P	369	ENI	ENTER THE RETURN	
00339	14200330 P	370	UJP	LINK THE BLOCK INTO THE	
00340	00341 P	371	DKDONE04		
00341	20300306 X	372	EQU	ENTER THE RETURN	
00342	14177774	373	ENI		
00343		374	ERRPRINT		
00344		375	EQU		
00345		376	LDA	GET THE STATUS WORD	
00346			ENI	PRINT 4 CHARACTER STATUS	

00343	14700000		377		ENQ	0	
00344	13000003		378		SHAQ	3	
00345	43402742 P	00570 2	379		SQCH	MESSST+3,X1	
00346	02100343 P		380		IJI	*-3,X1	
00347	20300325 X		381		LDA	MXQERR,X3	GET THE ERRCR CCOUNT
00350	13077733		382		SHAQ	-36	
00351	51077777 X		383		DVA	D10	
00352	42002710 P	00562 U	384		SACH	MESSCNT	SAVE THE COUNT
00353	43002711 P	00562 1	385		SQCH	MESSCNT+1	
00354	20300330 X		386		LDA	MXQCOM,X3	LOAD THE UNIT NUMBER
00355	12077755		387		SHA	-18	
00356	53500000		388		TAI	X1	UNIT NUMBER TO X1
00357	13077747		389		SHAQ	-24	
00360	51000351 X		390		DVA	D10	
00361	42002717 P	00563 3	391		SACH	MESSUNIT	SAVE THE LOGICAL UNIT NUMBER
00362	43002720 P	00564 0	392		SQCH	MESSUNIT+1	
00363	20100113 X		393		LDA	DISKADD,X1	LOAD THE DISK ADDRESS
00364	14177770		394		ENI	-7,X1	8 CHARACTER ADDRESS
00365	14700000		395		ENQ	0	
00366	13000003		396		SHAQ	3	
00367	43402733 P	00566 3	397		SQCH	MESSADD+7,X1	
00370	02100365 P		398		IJI	*-3,X1	
00371	20300323 X		399		LDA	MXQWC,X3	LOAD THE I/O REQUEST
00372	12077752		400		SHA	-21	
00373	17600003		401		ANA	3B	
00374	53500000		402		TAI	X1	
00375	22402704 P	00561 0	403		LACH	IO TYPE, X1	
00376	42002713 P	00562 3	404		SACH	MESSREQ	
00377	11002710 P	00562 0	405		ECHA	MESS	ENTER THE ADDRESS OF THE MESSAGE
00400	14700034		406		ENQ	MESSL	ENTER THE LENGTH
00401	01077777 X		407		UJP	OPMSG	GO COMPLAIN
	00402 P		408				
00402	77200000		409	DKERR	EGU	*	
00403	17607777		410		COPY	0	GET THE CURRENT STATUS
00404	35300341 X		411		ANA	7777B	JUST THE STATUS
00405	40300404 X		412		SSA	MXQCSTAT,X3	
	40300404 X		413		STA	MXQCSTAT,X3	SAVE THE NEW STATUS
	00406 P		414				
00406	20300347 X		415	DKERR02	EQU	*	
00407	15410000		416		LDA	MXQERR,X3	GET THE ERROR COUNT
00410	40300406 X		417		INA,S	10000B	CHALK UP ANOTHER ONE
00411	13077763		418		STA	MXQERR,X3	
00412	12477763		419		SHAQ	-12	HAVE WE EXCEEDED THE LIMIT
00413	14277777 X		420		SHQ	-12	
00414	03600341 P		421		ENI	MXBT,X2	ENTER THE RETURN FOR ERRPRINT
00415	17600007		422		AQJ,GE	ERRPRINT	JUMP IF TOO MANY ERRORS
00416	15477775		423		ANA	7B	DO WE WANT TO DO THE RESTORE
00417	03100422 P		424		INA,S	-2	
00420	77100001		425		AZJ,NE	*+3	
00421	14000000		426		SEL	0001B,SELECT	
00422	20300405 X		427		NOP	0	
00423	17600010		428		LDA	MXQCSTAT,X3	CHECK THE LAST ERROR STATUS
00424	03000033 P		429		ANA	0010B	CHECK FOR ADDRESS ERROR BIT
00425	77100020		430		AZJ,EQ	SEEKLOOP	JUMP IF NOT ADDRESS ERROR
00426	14000000		431		SEL	0020B,SELECT	SELECT READY AND NOT BUSY INTERRU
00427	01000033 P		432		NOP	0	THE HARDWARE IS DOING A RESTORE
	01000033 P		433		UJP	SEEKLOOP	TRY TO DO ANOTHER TRANSFER
	00430 P		434				
00430	17600010		435				
00431	03000033 P		436	INSORTER	EQU	*	
00432	20300371 X		437		ANA	10B	LEAVE THE MEMORY PARITY ERROR BIT
00433	03300033 P		438		AZJ,EQ	SEEKLOOP	JUMP IF NOT MEMORY PARITY ERROR
	03300033 P		439		LOA	MXQWC,X3	LOAD THE I/O REQUEST
	03300033 P		440		AZJ,LT	SEEKLOOP	DO READS AGAIN
	00434 P		441				
00434	14477776		442	MXIRERR	EQU	*	
00435	34300354 X		443		ENA,S	-1	SET THE IR RETURN
00436	01000330 P		444		RAD	MXQCOM,X3	
	01000330 P		445		UJP	DKDONE02	
	01000330 P		446				
	00437 P		447				
00437	77550000		448	SEEKERR	EQU	*	
00440	53500000		449		CIA		GET THE CHANNEL NUMBER
00441	14600001		450		TAI	X1	CHANNEL TO X1
00442	12100000		451		ENA	1	FORM THE MASK FOR THE CLCA
00443	16612000		452		SHA	0,X1	
00444	44000445 P		453		XOA	12000B	FOR THE CLCA
00445	77512000		454		SWA	*+1	
	77512000		455		CLCA	IMPURE	TURN OFF GREEN LITES

00446 01000060 P

456

UJP

SEKLUP02

TRY AGAIN

00447	53020022	45 E	REJ	TMA	CLOCK	GET THE CURRENT CLOCK
00450	15477776	45 S		INA,S	-1	WAIT MAX OF 1 MSEC.
00451	03600231 P	460		AQJ,GE	SELREADY	JUMP IF WE LOST
00452	77100000	461	SELCODE	SEL	IMPURE,SELECT	
00453	01000447 P	462		UJP	REJ	
00454	01000000	463	SEL	UJP	IMPURE	
00455	44000452 P	464		SWA	SELCODE	SAVE THE FUNCTION CODE
00456	53010022	465		TMQ	CLOCK	GET THE CURRENT CLOCK
00457	01000452 P	466		UJP	SELCODE	
		467				
		468				
00460	01000000	469	CHANINT	UJP	IMPURE	
00461	13000030	470		SHAQ	24	ERROR BITS TO Q
00462	77550000	471		CIA		GET THE CHANNEL NUMBER
00463	53500000	472		TAI	X1	
00464	20100223 X	473		LDA	DKACTIVE,X1	GET THE PROPER UNIT
00465	03000460 P	474		AZJ,EQ	CHANINT	WERE NOT USING THE CHANNEL
00466	53700000	475		TAI	X3	
00467	13000030	476		SHAQ	24	ERROR BITS BACK TO A
00470	40300303 X	477		STA	MXQISTAT,X3	SAVE THE STATUS FROM INTSORT
00471	03100460 P	478		AZJ,NE	CHANINT	
00472	77205024	479		EXS	5024B,SENSE	COPY STATUS IF ABNORMAL OR
00473	77200000	480		COPY	0	COMPARE ERROR
00474	17607777	481		ANA	7777B	SAVE JUST THE STATUS
00475	35300422 X	482		SSA	MXQCSTAT,X3	GET THE STATUS FROM LAST TIME
00476	40300475 X	483		STA	MXQCSTAT,X3	SAVE THE CHANNEL STATUS
00477	01000460 P	484		UJP	CHANINT	EXIT BACK TO INTSCRT

```

487 *
488 *
489 *
490 * THIS WANDERS AROUND AND CHECKS TO SEE IF ANY DISK
491 * UNITS ARE HUNG
492 *
493 * A THOUGHT:
494 * DO WE REALLY NEED TO SAVE THE CHANNEL INDEX REGISTER
495 *

497
498 MXBTRET LDI DKRETURN,X3 LOAD THE RETURN ADDRESS
499 DKCLK STI DKCLKRET,X3 SAVE THE RETURN
500 CIA
501 SACH DKCLK12+3 SAVE THE CHANNEL INDEX
502 ENI MSUNITS,X1 REGISTER
503 DKCLK02 LDA BIT23 LOOK FOR BIT23
504 LDQ BIT23
505 MEQ MXWAITQ,1
506 UJP DKCLK04
507 TIA X1 LOGICAL DEVICE NUMBER TO A
508 SHAQ -24
509 DVA D10
510 SACH READYUNT
511 SQCH READYUNT+1 STORE THE UNIT NUMBER IN THE
512 ECHA REAUYNES MESSAGE
513 ENQ READYMSL
514 ENI DKCLK02,X2
515 UJP OPMSGX GO COMPLAIN
516
517 DKCLK04 ENI MSUNITM1,X1
518 LDA MXWAITQ,X1
519 ASG 1 SKIP IF A POINTER IS PRESENT
520 UJP *+3 JUMP IF NOT
521 SSA BIT23
522 STA MXWAITQ,X1
523 IJD *-5,X1 LOOP THRU ALL UNITS
524
525 ENI NUMDKM1,X1
526
527 DKCLK06 LDA DKCONTAB,X1 ARE WE USING THIS CONTROLLER
528 AZJ,LT DKCLK10 JUMP IF WE ARE
529 STI DKCLK08,X1 SAVE INDEX 1
530 SHA -15 FAKE AN EQUIPMENT INTERRUPT
531 TAI X1
532 ACI
533 INS 0007B,SENSE IS THE CHANNEL BUSY
534 UJP DKCLK08 JUMP IF IT IS
535 ENI DKCLK08,X3 ENTER THE RETURN
536 ASG 100B SKIP IF NOT ON LINE
537 UJP DKINT
538 DKCLK08 ENI IMPURE,X1 RESTORE X1
539
540 DKCLK10 IJD DKCLK06,X1 CHECK ALL CONTROLLERS
541
542
543 DKCLK12 ENA IMPURE RESTORE THE CHANNEL INDEX
544 ACI
545 DKCLKRET UJP IMPURE REGISTER EXIT

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00552	00000240	00552 P	547	SECPCYL	EQU	*	SECTORS PER CYLINDER
00553	00010000		548		DEC	160	853/854
00554	00000430		549		DEC	4096	813/814
			550		DEC	280	841
			551				
00555	00000010	00555 P	552	SECPFB	EQU	*	SECTORS PER FILE BLOCK
00556	00000010		553		DEC	8	853/854
00557	00000004		554		DEC	8	813/814
			555		DEC	4	841
			556				
			557				
00560	00000000		558	SEEKADD	VFD	A24/IMPURE	
00561	51236666		559				
			560	IOTYPE	BCD	1,RCWW	
			561				
			562				
00562	67676000	02710 P	563	MESS	EQU,C	*	
00562	67676067		564	MESSCNT	BCD,C	3,XX	
00563	60641367		565	MESSREQ	BCD,C	4,X U-	
00565	00010203		566	MESSUNIT	BCD,C	5,XX A=	
00567	60621367		567	MESSADD	BCD,C	11;01234567 S=	
	00034		568	MESSST	BCD,C	5,XXXX^	
			569	MESSL	EQU,C	*-MESS	
			570				
00571	51252124		571	READYMES	BCD,C	16,READY DISK UNIT	
00575	67677700		572	READYUNT	BCD,C	3,XX^	
	00023		573	READYMSL	EQU,C	*-READYMES	
00575			574		BSS	0	FIX THE P COUNTER
			575		END		

NO LINES WITH ERRORS

BIT23	X	63	261 00215P	365 00333P	503 00505P	504 00506P	521 00526P	
BLOCKTBL	X	64	160 00055P	474 00465P	478 00471P	484 00477P		
CHANINT	00460P	469	119 00016P	465 00456P	269 00225P	275 00230P		
CLOCK	00022	15	458 00447P	170 00066P				
CON	00061P	165	152 00044P					
CON02	00255P	316	315 00254P					
CONCODE	00244P	285	128+1 00027P	147+1 00040P	171 00067P			
CONERR	00230P	275	166 00062P					
CONFAG	00236P	283	144+1 00034P	171+1 00070P	286 00245P	288 00247P		
CONFGLG1	00240P	283+2	144+2 00035P	158+1 00053P				
CONNECT	X	65	118 00015P					
CONNUM	00164P	234	130 00030P	260 00214P				
COUNT	00012	39	197 00123P	282 00234P				
D10	X	66	383 00351P	390 00360P	509 00513P			
DINT	07773	41	105 00000P					
DISKADD	X	67	191 00113P	393 00363P				
DKACTIVE	X	68	267 00223P	473 00464P				
DKCLK	E	00501P	499	49 00000P				
DKCLK02		503	514 000520P					
DKCLK04		517	506 000510P					
DKCLK06		527	540 000546P					
DKCLK08		538	529 000534P	534 00541P	535 00542P			
DKCLK10		540	528 000533P					
DKCLK12		543	501 000503P					
DKCLKRET		545	499 000501P					
DKCONTAB	X	69	110 00005P	112 00007P	126 00024P	128 00026P	262 00216P	263 00217P
DKDONE		357	347 00314P	349 00316P	351 00320P			
OKDONE02	00330P	361	372 00340P	445 00436P				
DKDONE04	00340P	371	360 00327P					
DKERR	00402P	409	340 00305P					
DKERR02	00406P	415	343 00310P					
DKEXIT	00250P	290	283+3 00241P	317 00256P	319 00260P	322 00263P		
DKEXIT.1	00246P	286+1	283+5 00243P					
DKINT	E	00000P	104	50 00000P	537 00544P			
DKIO	00205P	252	222 00146P	247 00200P	249 00202P			
DKOPINPR	00254P	314	132 00032P					
DKPF	00040	43	229 00157P	241 00173P	243 00175P			
DKPOINT	X	70	268 00224P	324 00265P				
DKRETURN	00227P	271	131 00031P	290 00250P	498 00500P			
DKSTATAB	X	71	146 00036P	151 00043P				
DKWRITE	00145P	218	214 00142P					
ENDLOOP	00233P	279	150 00042P	158 00052P	206 00134P			
ERRPRINT	00341P	374	422 00414P					
EXITING	00234P	281	147 00037P					
GAMBLE	E	00222	30	52 00000P				
IMPURE		00000	14	165 00061P	190 00112P	234 00164P	252 00205P	252 00205P
				271 00227P	283 00236P	283+2 00240P	285 00244P	286+1 00246P
				330 00273P	331 00274P	455 00445P	461 00452P	463 00454P
				538 00545P	543 00547P	545 00551P	559 00560P	469 00460P
INSORTER	00430P	436	345 00312P					
IOSHARE	00146P	221	210 00140P	216 00144P				
IOTYPE	00561P	561	403 00375P					
MESS	00562P	563	569 00571P	405 00377P				
MESSADD	00565P	567	397 00367P					
MESSCNT	00562P	564	384 00352P	385 00353P				
MESSL	00034	569	406 00400P					
MESSREQ	00562P	565	404 00376P					
MESSST	00567P	568	379 00345P					
MESSUNIT	00563P	566	391 00361P	392 00362P				
MONREAD	E	00444	36	53 00000P				
MSFI0	77775	26	34 00000P	35 00000P				
MSFREAD	E	00445	34	36 00000P	54 00000P			
MSFREL	00252P	294	232 00162P					
MSFWRITE	E	00335	35	55 00000P				
MSUNITM1	X	73	517 00522P					
MSUNITS	X	72	502 00504P					
MXBT	X	74	421 00413P					
MXBTRET	E	00500P	498	56 00000P				
MXIRERR	E	00434P	442	57 00000P				
MXNE	X	75	369 00337P					
MXQADD	X	77	181 00101P	183 00103P				
MXQCOM	X	78	362 00330P	386 00354P	444 00435P			
MXQCSTAT	X	83	255 00210P	258 00213P	341 00306P	375 00341P	412 00404P	413 00405P
			428 00422P	482 00475P	483 00476P			
MXQERR	X	79	358 00325P	381 00347P	416 00406P	418 00410P		
MXQISTAT	X	82	224 00150P	337 00302P	338 00303P	477 00470P		
MXQQ	X	81	235 00163P	295 00252P				
MXQWC	X	80	178 00076P	207 00135P	230 00160P	248 00201P	346 00313P	354 00323P

			399 00371P	439 00432P				
			156 00050P	367 00335P	505 00507P	518 00523P	522 00527P	
			320 00261P					
			279 00233P					
			34 00000P	35 00000P	36 00000P			
			27 00001P	31 00000P	33 00000P			
			24 00004P					
			212 00141P	208 00136P				
			88 00004P	125 00023P				
			89 00531P					
			90 00401P					
			91 00521P					
			31 00000P	51 00000P				
			571 00575P	512 00516P				
			573 00517P					
			572 00514P	511 00515P				
			458 00453P					
			547 00107P					
			553 00105P					
			559 00056P	184 00104P	192 00114P	195 00120P	195 00120P	
			448 00127P					
			143 00324P	368 00336P	430 00424P	433 00427P	438 00431P	440 00433P
			163 00446P					
			463 00116P	226 00152P	6 00154P	6 00156P		
			461 00455P	466 00457P				
			45 00074P	276 00231P	286+1 00246P	318 00257P	321 00262P	426 00420P
			276 00065P	461 00452P				
			46 00063P	460 00451P				
			46 00064P	168 00064P	198 00124P	200 00126P	202 00130P	203 00131P
			479 00472P	533 00540P				
			246 00253P					
			92 00025P					
			330 00270P					
			331 00272P					
			93 00251P					
			190 00054P					
			32 00000P	58 00000P				
			33 00000P	59 00000P				
			33 00000P	58 00000P				
			9+1 00034P	144+1 00034P	144+2 00035P	283+2 00240P		
			10 00001P	109 00004P	112 00007P	113 00010P	125 00023P	128 00026P
			10 00001P	130 00030P	164 00060P	175 00073P	185 00105P	187 00107P
			191 00113P	197 00123P	199 00125P	204 00132P	205 00133P	229 00157P
			251 00204P	265 00221P	267 00223P	275 00230P	282 00234P	286 00245P
			288 00247P	296 00253P	323 00264P	324 00265P	364 00332P	367 00335P
			368 00336P	376 00342P	379 00345P	380 00346P	388 00356P	393 00363P
			394 00364P	397 00367P	398 00370P	402 00374P	403 00375P	450 00440P
			452 00442P	472 00463P	473 00464P	502 00504P	507 00511P	517 00522P
			518 00523P	522 00527P	523 00530P	525 00531P	527 00532P	529 00534P
			531 00536P	538 00545P	540 00546P			
			115 00012P	120 00017P	131 00031P	144 00033P	146 00036P	151 00043P
			158+1 00053P	171+1 00070P	236 00166P	241 00173P	243 00175P	244 00176P
			260 00214P	262 00216P	263 00217P	268 00224P	270 00226P	279 00233P
			290 00250P	372 00340P	421 00413P	514 00520P		
			114 00011P	117 00014P	155 00047P	156 00050P	159 00054P	160 00055P
			162 00057P	178 00076P	181 00101P	183 00103P	207 00135P	224 00150P
			230 00160P	233 00163P	248 00201P	255 00210P	258 00213P	266 00222P
			295 00252P	325 00266P	337 00302P	338 00303P	341 00306P	346 00313P
			354 00323P	358 00325P	362 00330P	366 00334P	375 00341P	381 00347P
			386 00354P	399 00371P	412 00404P	413 00405P	416 00406P	418 00410P
			428 00422P	439 00432P	444 00435P	475 00468P	477 00470P	482 00475P
			483 00476P	498 00500P	499 00501P	535 00542P		